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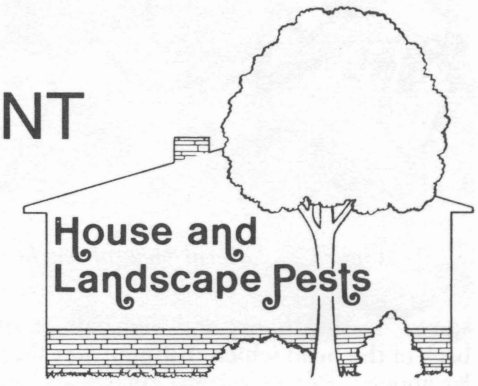
# TEXAS LEAF CUTTING ANT

J. W. Stewart*




The Texas leaf cutting ant has several common names including the town ant, cut ant, parasol ant, fungus ant and night ant. Whatever the ant is called, it is a very important pest.

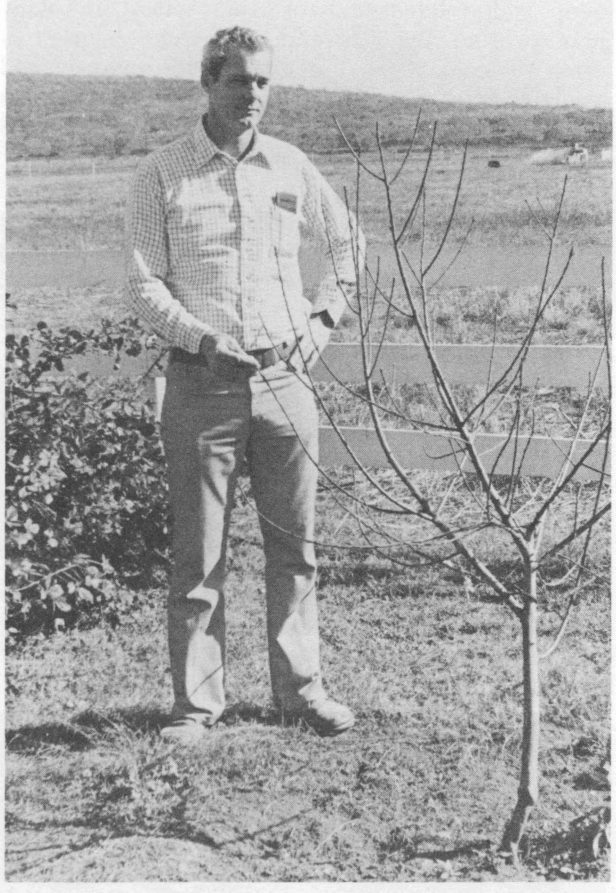


*Figure 1. The author inspecting a peach tree defoliated by leaf cutting ants during a one-night period.*

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This insect can cause extensive damage in a very short time. It is a frustrating insect because of its unrelenting attack on trees and shrubs, but it is also one of the most interesting insects because of its complex life style. The leaf cutting ant lives in large colonies that may exceed 2 million ants, and is one of nature's original gardeners. Leaf cutting ants share the sophisticated habit of growing a fungus garden with certain termites in Africa and Asia and certain wood boring beetles.

The leaf cutting ant removes leaves and buds from weeds, grasses, plum and peach trees, blackberry bushes and many other fruit, nut and ornamental plants as well as several cereal and forage crops. The ants attack pine trees but ordinarily they do little damage when other green plants are available. During the winter when green plant material is scarce, pines can be damaged seriously. In East Texas and West-Central Louisiana, this insect is a serious pine seedling pest. In areas where ants are abundant, it is almost impossible to establish natural pine reproduction. When the infested areas are planted, the young pine seedlings often are destroyed within a few days unless the ants are controlled before planting.

The ants do not eat the leaf fragments, but take them into cavities where they use the material to raise a fungus garden.

These ants have highly refined habits and raise one particular type of fungus. Certain workers attend the fungus garden at all times and weed out or destroy other types of fungi that start to grow on the material. As the fungus grows, certain parts of it are eaten by the ants and fed to the larvae. This fungus is their only known source of food.

## Description

Leaf cutting ants are rust brown to dull dark brown and vary greatly in size. The workers range from 1/16- to 1/2-inch long and the queen is about 3/4-inch long. Workers have three pairs of prominent

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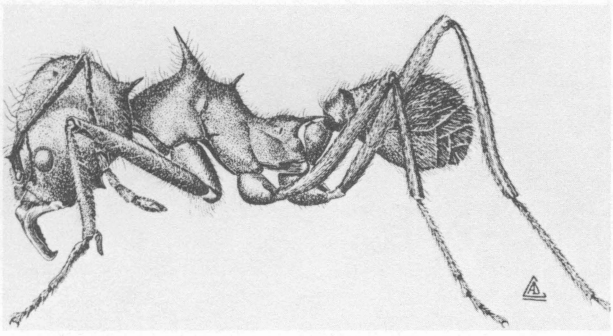

*Figure 2. Lateral view of worker ant.*

spines on the thorax and one pair of spines on the back of the head which distinguishes them from similar ants.

The queen is the reproductive center of the colony and lives in a chamber below ground. Some colonies have as many as four or five fertile queens that deposit tiny white eggs. The eggs develop into cream colored larvae ranging from ¼ to ½-inch long. Most of these larvae develop into sterile female worker ants. During the spring months some of these larvae develop into winged males and winged females. These individuals can number into the thousands and are so unusual in size and color that they are often not recognized as leaf cutting ants. Several times larger than the worker ants, they are dark, rusty brown and have long black wings.

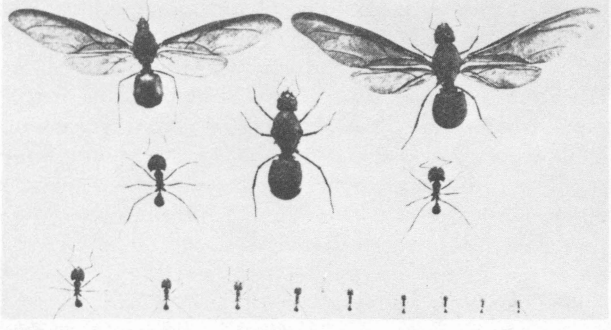

*Figure 3. Leaf cutting ant castes and sizes. A male at the upper left, a virgin queen at upper right, and a mated queen at center. Workers are shown without differentiation of castes.*

## Life History and Habits

On clear, moonless nights during April, May and June, winged males and females leave the colony on mating flights. In areas of higher rainfall, ant swarms can occur at any time during the spring months; however, in the more arid areas of South Texas the swarms invariably occur immediately after heavy rainfall.

Prior to the nuptial flight the virgin queens store a small portion of the fungus garden in a small cavity inside their mouths. Following the mating swarm, the winged males die while the mated queens fly to the ground, lose their wings and attempt to establish small nests beneath the soil. A small gallery is dug in the soil after the queen takes the small fungus wad from her mouth and begins to culture it for the first few eggs that hatch. The fungus is nourished initially by fecal material. Approximately 90 percent of the first brood of eggs are eaten by the queen, with only 10 percent of this small number of eggs reaching adulthood. The first brood of worker ants will be quite small because of limited food intake during the larval stage. These first workers bring back leaf fragments to enlarge the fungus garden, thus providing more food for later broods. As the colony gets stronger, newly emerged worker ants will be larger as a result of plentiful food during the larval stage.

Individual colonies can exist for years. If adequate food is available, the colonies continue to expand and may contain over 2 million ants.

Leaf cutting ant colonies or "towns" may be established along roadsides, in open fields, in burshland or in the shade of forests. The colonies are restricted to deep, well drained sandy or loamy soils. One colony may cover an area of several square feet to almost an acre. The colony size directly depends upon age and available plant material. In heavily infested areas it is often difficult to distinguish where one colony ends and another colony begins.

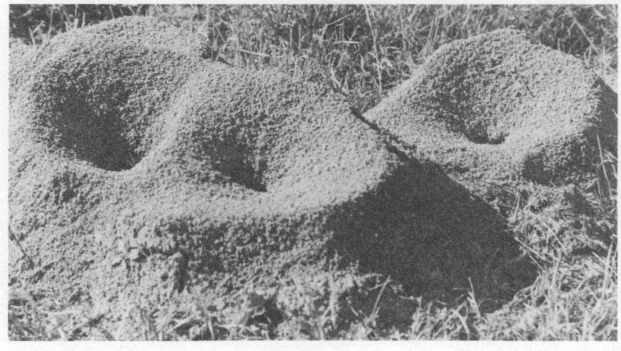

*Figure 4. Numerous crater-shaped mounds mark the area directly above the main cavity of a leaf cutting ant colony. The picture below reveals detail of mounds.*

A colony is marked by the presence of a number of crater shaped mounds about 5 to 14 inches high and usually 1 to 1½ feet in diameter. Each mound surrounds an entrace hole. Directly above the main part of the mound, the large central cavity, there will be several entrance holes marked by typical crater shaped mounds.

The nest interior consists of several chambers that may reach 15 to 20 feet deep. All chambers are interconnected by narrow tunnels. Vertical tunnels extend to mound openings; lateral foraging tunnels lead outward 400 to 500 feet away from the central cavity and are commonly referred to as "feeder holes". The complex structure of the cavities and interconnected tunnels serve two basic purposes: (1) they allow the ants to travel underground, thereby escaping predators, and (2) they provide an aeration system that circulates fresh air throughout the colony at all times.

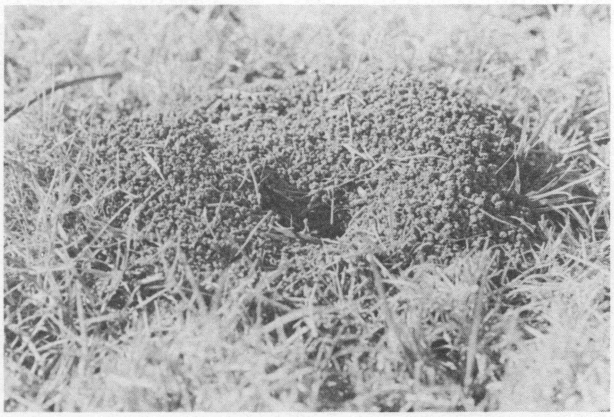

*Figure 5. Small mound that surrounds a "feeder hole." An underground tunnel leads from each feeder hole back to the main cavity.*

Foraging activities above ground depend largely upon temperature. During the summer the ants will forage almost exclusively at night. During the fall, winter and spring, when air temperatures range between 45 to 80 degrees F., foraging generally takes place during the day. Most of the mound building and similar activities also are accomplished during the cool hours of the day. The ants are usually inactive on cold, wet or cloudy days.

Aboveground the ants have clearly defined foraging trails that extend feeder holes to the desired food plants. Ants will travel 600 feet or more to reach a suitable plant. Once the plants are located, they attack in large numbers, cutting leaves and carrying the fragments with their mandibles or mouth parts. They carry leaf fragments in a manner which resembles an umbrella held over the head, hence the reason for the common name, "parasol ant". Leaf fragments accumulate at the base of the tree or bush being attacked, and hundreds of ants will be seen

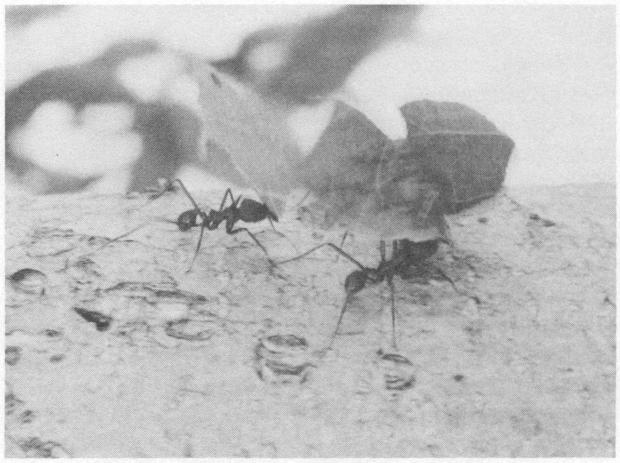

*Figure 6. Leaf fragments carried in this manner resulted in the common name "parasol ant."*

carrying leaf fragments back to the feeder holes. At the entrance of the feeder holes the ants chew the fragments into small pieces that are better suited for their underground fungus gardens.

## Damage Symptoms

Defoliation by leaf cutting ants can resemble damage produced by several other leaf chewing insects, particularly sawflies and leaf cutting bees. Trees defoliated by the leaf cutting ant usually are within sight of an ant nest and the ants themselves may be seen carrying leaves, while the foraging trails will be littered with pieces of leaf tissue that can be traced to a feeder hole.

These ants can do considerable damage in just a few hours. Small to medium size trees can be stripped in one night. A researcher in South America estimated that one large colony had harvested approximately 13,000 pounds of leaves over a 6-year period. This same colony had excavated 802 cubic feet of soil weighing over 44 tons.

*Figure 7. Large colonies can excavate tons of soil over a 4 or 5 year period. This mound in South Texas is over 30 feet in diameter.*

## Control

Effective baits are no longer available for leaf cutting ant control. Temporary relief may be obtained by locating the foraging trails leading from the plant under attack to a feeder hole and spraying the trail with products containing either chlorpyrifos (Dursban®) or diazinon insecticide. Time the insecticide application to coincide with ant activity for best results. If possible, locate the "town" and spray each mound that has ants present at the soil surface.

Fumigation with methyl bromide gas or carbon bisulfide (Highlife) can kill an entire colony if administered properly. Fumigation should be used only when the colony is located away from human dwellings. For best results, locate the main cavity marked by numerous crater-shaped mounds and insert the adapter tubing into an active entrance hole. Puncture the methyl bromide container with an approved adapter and allow the contents to empty into the mound. Do not withdraw the tubing until the entire contents of the can is emptied. Always stand upwind while fumigating and keep the tubing attachment pointing away from the body and directed downwind. Methyl bromide gas is highly toxic to humans. Also, spilling the liquid on the skin can result in painful burns. Fumigation with methyl bromide should only be done by skilled personnel. See L-2062 *Methyl Bromide Fumigation for Controlling the Leaf Cutting Ant* for detailed instruction.

Carbon bisulfide should be poured into the active entrance holes directly above the main cavity. One quart will usually kill an entire colony. CAUTION: HIGHLIFE IS HIGHLY FLAMMABLE. DO NOT USE NEAR ANY FIRE OR FLAME AND DO NOT STORE UNUSED PORTIONS INSIDE ANY DWELLING!

## Safety First

Before using any chemical, READ THE LABEL and follow all instructions and safety precautions. Avoid chemical contact with skin. Wash exposed areas with generous amounts of soap and water.

Store chemicals away from human dwellings in locked cabinets and out of reach of children and pets.



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